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THE AGRICULTURAL HISTORY SOCIETY

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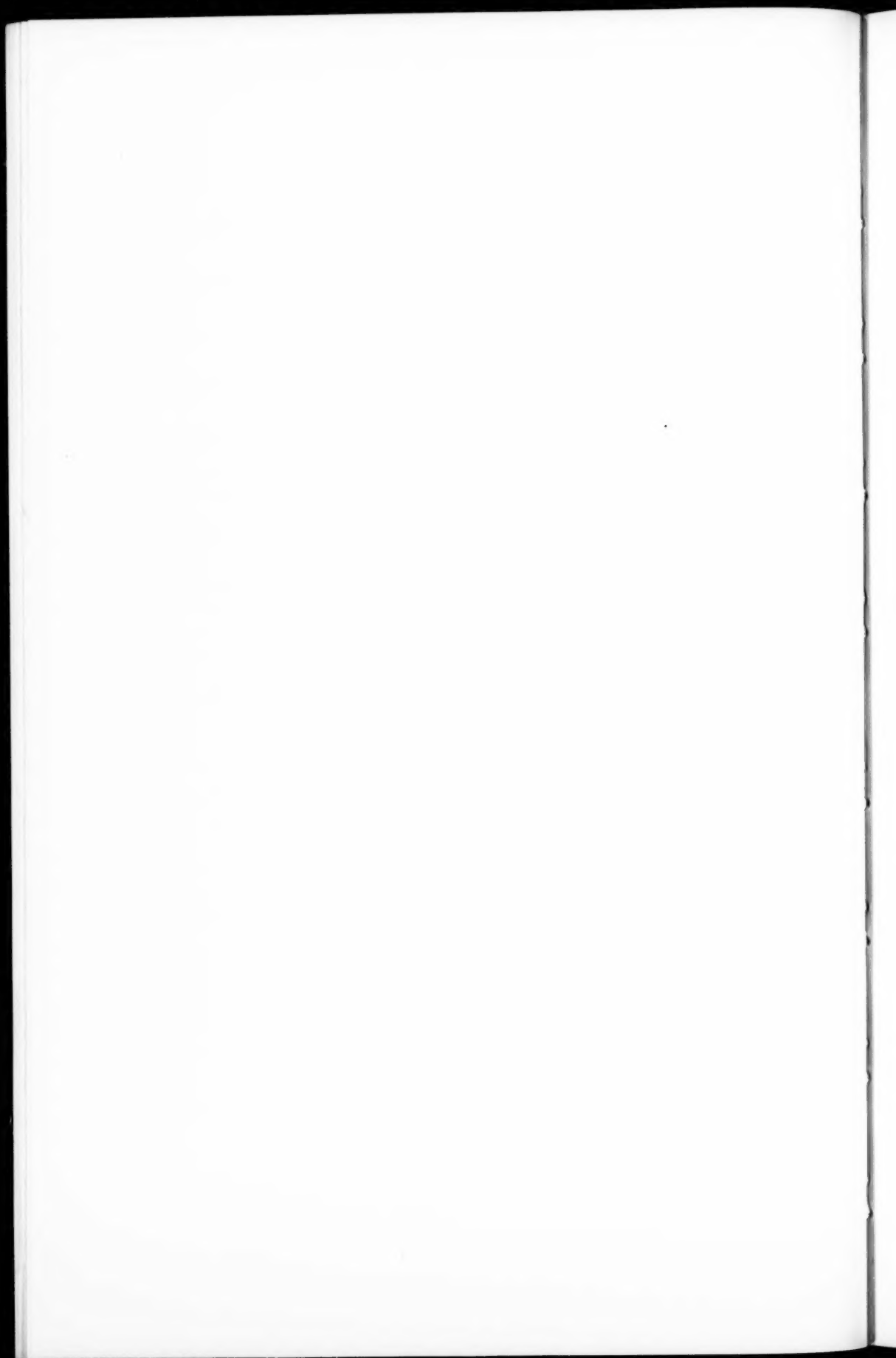
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AGRICULTURAL HISTORY

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THAT HARD WINTER IN MONTANA, 1886-1887

BY ROBERT S. FLETCHER

Assistant Professor of History, Oberlin College

The years from 1880 to 1885 constitute the great boom period in the history of the Montana range cattle business. Then in 1886 and 1887 nature and economics seemed to conspire together for the entire overthrow of the industry. It was not, however, completely destroyed, but emerged, it is true with much pain and travail, and somewhat reorganized, but on a saner and sounder basis. Throughout the nineties the annual output of cattle in Montana was regularly more than twice as great as in any year before the hard winter.¹

In 1885 beef prices had dropped considerably and in 1886 they fell off even more abruptly.² The optimists (undoubtedly a

¹ The total number of cattle slaughtered in or shipped from Montana annually during 1885-1904 was as follows:

YEAR	NUMBER	YEAR	NUMBER	YEAR	NUMBER	YEAR	NUMBER
1885	70,089	1890	174,035	1895	306,460	1900	180,055
1886	119,620	1891	250,000	1896	254,864	1901	152,000
1887	82,134	1892	263,000	1897	252,162	1902	230,538
1888	167,662	1893	279,655	1898	232,225	1903	210,573
1889	115,469	1894	302,655	1899	203,498	1904	228,775

These figures have been prepared from a careful year by year study of the *Annual Reports of the Montana Board of Stock Commissioners*. The summary of output for previous years contained in the later *Reports* is highly inaccurate. The *Montana Farm Review*, I (Helena, 1923), 25, copies this inaccurate data. The estimated local consumption included in these figures was 25,000 in 1891, 60,000 in 1892, 50,000 in 1893, 60,000 in all years from 1894 to 1901, 70,000 in 1902 and 1903, and 60,000 again in 1904.

² Annual average price per cwt. of range cattle at Chicago: 1882, \$4.75; 1883, \$4.70; 1884, \$4.40; 1885, \$3.90; 1886, \$3.30; and 1887, \$3.15. *Drovers' Journal, Yearbook of Figures by the Chicago Daily Drovers Journal* (Chicago, 1925), 46.

majority on the range at that time) felt that these low prices were only temporary and held over many steers that they would otherwise have marketed. In the meantime outside cattle continued to be shipped in.³ The forage was in the worst condition since the country had been known to the white man. Because of the extreme drouth the grass seemed hardly to grow at all and when it did grow there were always cattle waiting to crop it back to the roots. Sometimes the cattle were forestalled by the grasshoppers. Streams as large as the Rosebud ceased to flow and the face of the country looked like a desert. "The earth in every direction had been trampled and hoof-beaten so that it presented a powdered appearance and every gust of wind was laden with clouds of sand and dust," reported an observer in the fall. "Truly it looked as though every vestige of vigor and growth had been beaten out of the former grassy ranges."⁴ Excessive heat accompanied the dry weather throughout the season. At last, in October, the rain came, too late.⁵ Writing many years later, John Clay recalled it as the "worst season ever experienced."⁶

Range fires followed in the wake of the drouth, consuming much of the forage that still remained.⁷ The calves and cows, weakened by lack of sustenance, were easy prey to the wolves.⁸ Poisonous plants, unattractive to the stock when grass was plenty, were often eaten and caused occasional losses.⁹ All prayed that the winter weather might be mild. Cattle were in no condition to face an unusually cold season.

Then it came, that winter! In November it set in in earnest, shutting down on the northern range like great iron pincers. It snowed almost without abating; the mercury dropped down

³ Paul C. Phillips (ed.), *Forty Years on the Frontier as Seen in the Journals and Reminiscences of Granville Stuart* (Cleveland, 1925), II, 230-231.

⁴ *Weekly Yellowstone Journal* (Miles City, Mont.), Oct. 23, 1886.

⁵ *Ibid.*, June 19, July 24, Sept. 11, 18, Oct. 16, 1886.

⁶ John Clay, *My Life on the Range* (Chicago, 1924), 176.

⁷ *Weekly Yellowstone Journal*, July 31 and Aug. 21, 1886.

⁸ *River Press* (Fort Benton), Aug. 4, 1886; and *Fergus County Argus* (Lewistown), Oct. 28, 1886.

⁹ Paul C. Phillips, *op. cit.*, II, 230.

into the bulb of the thermometer and stayed there. "It was as though the Arctic regions had pushed down and enveloped us," wrote Granville Stuart. "Everything was white. Not a point of bare ground was visible in any direction." The Indian agent on the Blackfeet Reservation reported "snow storms and blizzards almost daily during the months of December, January, and February." Cattlemen and cowboys were marooned in isolated cabins, sometimes with insufficient supplies, for months. It was very dangerous and almost impossible to ride a horse except along the most frequented trails. The cattle wandered around and attempted to rustle at first, but as the snow grew deeper and the crust harder and the cold continued intense, many of them gave up and huddled together under cut-banks or in the lee of cottonwood groves. Some drifted into the streets of the towns, standing about the livery stable manure piles where they could pick up a few wisps of straw.¹⁰

There was practically no other subject of discussion among cattlemen and sheepmen. How long would it last? Were the losses great already? Conflicting guesses were made all winter long. A report from Fergus County, the first week in February, stated that "there is no feed and an early spring is the only salvation." As late as the beginning of April, Joe Scott considered the prospects "very encouraging, considering the extremely hard winter."¹¹

The "chinook" came early in March. The comment of the Miles City newspaper is as warm and revivifying as was the wind from over the Rockies. "All day Sunday and yesterday the glorious chinook with unabated vigor has been undoing the work of the ice king . . . the snow has disappeared as if by magic. Dripping eaves and slushy streets give evidence of the good work performed and the hill tops loom up black and rugged. . . .

¹⁰ Theodore Roosevelt, *Ranch Life and the Hunting Trail* (New York, 1888), 77-78; P. C. Phillips, *op. cit.*, II, 235-236; M. D. Baldwin, U. S. Indian Agent, Blackfeet Agency, Aug. 20, 1887 to the Commissioner of Indian Affairs in the Indian Affairs Commr. Ann. Rpt. (1887), 132.

¹¹ *Weekly Yellowstone Journal*, Jan. 8, 22, 29, Feb. 5, 12, 19, Mar. 26, and Apr. 2, 1887.

At the risk of a setback, we cannot refrain from a third and last call, springtime has surely come, gentle Annie."¹²

The Montana Stock Growers' Association met at Miles City in mid-April as usual. The atmosphere was generally one of gloom. President Joseph Scott's efforts to be cheerful and optimistic in his inaugural address seem rather labored. "I am proud," he said, "that we have such an attendance. I think it is proof to us that we are not here to bury this large industry, as some have stated, but we are here to revive it. . . . It is true the chilling winds of last winter have been felt on the range, and in many places you can smell the dead carcasses in the canyons, but the case is not as bad as it might have been. Had the winter continued twenty days longer, we would not have had much necessity of an Association. . . . As it is, I feel that we are in a fair position to start again and make good the loss we have suffered the past winter." It is probable that neither Scott nor the other cattlemen realized the real extent of the losses at the time.¹³

The spring roundup told the truth. Then it was possible to approach an exact estimate of the losses of the previous winter, and those losses surpassed the most pessimistic prophecies. The conclusion reached by the *River Press*, which seems to be supported by other data, was that the mortality varied from 50 per cent and over in the Yellowstone and Musselshell region to 40 per cent on the Shonkin and in the Judith Basin and perhaps somewhat less in the Sun River country and on the Teton and Marias.¹⁴ Some estimates place the percentage even higher.¹⁵ Nelson Storey of Bozeman estimated his loss at two-thirds.¹⁶ Con Kohrs believed that 50 per cent was an approximate average for the whole region, and that there were well authenticated cases of loss as high as 90 to 95 per cent on the Yellowstone.¹⁷ The Home

¹² *Ibid.*, Mar. 5, 1887.

¹³ *Minutes of the Montana Stock Growers' Association* (ms), 142, in the Montana State Historical Society Library, Helena; and John Clay, *op. cit.*, 254.

¹⁴ *River Press*, June 22, 1887.

¹⁵ *Rocky Mountain Husbandman* (White Sulphur Springs), August 18, 1887.

¹⁶ *River Press*, April 6, 1887.

¹⁷ *Fergus County Argus*, August 18, 1887.

Land and Cattle Company lost 4,000 out of the 6,000 cattle which they were running just north of the Canadian line.¹⁸ James Fergus sold over \$2,000 worth of hides representing some 1,500 dead cattle.¹⁹ The Indians on the northern reservation made considerable money skinning cattle that had starved or frozen to death.²⁰ One estimate put the Montana cattlemen's loss from the hard winter as high as \$5,000,000.²¹

To meet the losses every marketable steer was shipped. Practically none of the animals was in condition for immediate slaughter, however, and as fodder was short in the Corn Belt there was little demand for feeders. Prices at Chicago took another drop.²² All summer long the trend of prices was downward and still the shipments continued as a matter of necessity. Finally on October 8, 1887 the word reached Miles City that a shipment of cattle belonging to the Pickering-Lewis Company had sold at Chicago at \$2.50 a hundred pounds. "A bunch of stockmen at the hotel," says the *Yellowstone Journal*, "jumped in amazement when the news was received. . . . Two dollars and a half for Montana beef. Think of it and shudder." The average price of range cattle at Chicago in 1887 was \$3.15, which would mean a return of less than \$38.00 for each 1200 pound steer. From this a freight charge of about six dollars a head must be deducted. Of course the animals shipped were under weight, many consignments averaging less than 1200 pounds, as in the good years many had averaged higher. Bearing in mind that, two or three years before, Montana stock cattle were bringing \$35.00 in large herds and taking into account the enormous losses of the preceding winter, it becomes quite evident that there were no profits made in range cattle in 1887.²³

¹⁸ *Weekly Yellowstone Journal*, August 20, 1887.

¹⁹ *River Press*, June 1, 1887. See also *Weekly Yellowstone Journal*, December 31, 1887.

²⁰ M. D. Baldwin, *loc. cit.*

²¹ *Weekly Yellowstone Journal*, Dec. 31, 1887.

²² *Rocky Mountain Husbandman*, Oct. 6, 1887 and John Clay, *op. cit.*, 180.

²³ *Drovers Journal*, *Yearbook of Figures*, 46. Freight rates were reduced in August from \$133.00 to \$117.00 per car from Miles City to Chicago. Information furnished by Mr. H. W. Byerly, Bureau of Immigration, Northern Pacific

Many cattlemen abandoned the game entirely—the bankruptcy of Alec Swan, the Wyoming cattle king, had a depressing effect. The most dramatic débâcle was the failure of the great Niobrara Cattle Company. In the spring of 1886 that concern estimated that it had 39,000 fat cattle, supposed to be worth a million dollars. In 1887 their liabilities amounted to \$350,000 and at their June roundup all they could show to meet these liabilities was 9,000 head, valued nominally at only \$250,000 and actually worth much less.²⁴ In October the Gibb Brothers sold off the remnant of a herd of 2,500 head—amounting to only 320 cattle—and quit the business.²⁵ It was in this year that Theodore Roosevelt returned to politics and the Marquis de Mores went to India to hunt tigers. Of 200 cattlemen and cattle companies assessed for over twenty head of cattle in 1886 in Custer County, only 120 were still so assessed two years later, and the average size of their holdings was considerably smaller than at the previous date.²⁶

Despite the extreme seriousness of the situation the industry really did recover surprisingly quickly and easily. In the first place, for the next two years nature seemed to repent. The heavy snowfall of the hard winter, melting and soaking into the ground, helped to produce an excellent growth of forage. Added to this was the fact that the over-stocking of 1885 and 1886 had been most effectively remedied by nature so that there was abundant feed for all the remaining cattle. The winter of 1887–88 was mild, fortunately; the losses were very slight and the calf crop of the following season was excellent.²⁷ Though the spring was somewhat backward, the forage was even better than that

Railway, St. Paul, Minnesota. About 20 head were shipped in one car. For sales of stockers: *Weekly Yellowstone Journal*, July 21, 1883, April 10, June 28, Aug. 9, Nov. 5, 1884, April 2, 4, 11, 18, May 30, 1885.

²⁴ *Fergus County Argus*, Oct. 27, 1887; and *Weekly Yellowstone Journal*, Oct. 15 and 22, 1887.

²⁵ *Ibid.*, Oct. 15, 1887.

²⁶ Assessment records of Custer County (mss.) in the County Court House, Miles City.

²⁷ *Weekly Yellowstone Journal*, May 21, July 9, Aug. 13, Sept. 3, Oct. 15, 1887, and Jan. 28, June 2 and 30, 1888; and *Rocky Mountain Husbandman*, July 28, 1887, and June 21, 1888.

of 1887, probably surpassing that of any other season in the history of eastern Montana with the possible exception of 1891.²⁸ Another reason for the comparatively rapid recovery was the fact that a large part of the loss fell on the shoulders of investors from the East and from Europe rather than on the local men. Most Montana banks had enough invested in mines to more than balance their loss in cattle.

The price of stock cattle dropped to around twenty dollars a head and less. Texas steers went down much lower. Cattlemen who had confidence in the range seized the opportunity to reestablish their depleted herds by buying the remnants of other outfits at these low prices or importing from the South. Pierre Wibaux borrowed money in France to invest in more cattle. In 1887 he purchased cattle from Hunter and Evans and others, besides getting the entire herd of the Running Water Land and Cattle Company, estimated at nearly 20,000 head. In 1889 he obtained about 10,000 more at \$18.50 per head from the Powder River Cattle Company.²⁹ George McCone of Dawson County reestablished himself in somewhat the same manner, borrowing extensively in order to buy up the scattered bunches of cattle left after the great losses of the previous winter.³⁰ There was a considerable importation of Texans. A good many were brought in in the fall of 1887³¹ and many more in 1888 and 1889. The State Veterinarian estimated that nearly a hundred thousand southern cattle were brought into Montana in 1889, besides 25,000 from Utah, Idaho, and Oregon and as many more driven in from Wyoming.³² The hard winter had resulted in large mortality among cattle from the East and they were decidedly unpopular at this time.—Before the opening of the nineties there

²⁸ *Weekly Yellowstone Journal*, April 7 and May 12, 1888; *River Press*, June 20, 1888; John Clay, *op. cit.*, 195; and *Fergus County Argus*, Jan. 19, 1888.

²⁹ *Rocky Mountain Husbandman*, Sept. 15, 1887; and *Weekly Yellowstone Journal*, May 28, Sept. 10, 1887, and May 26, 1889.

³⁰ Interview with Senator McCone at his ranch in Dawson County, May 15, 1926.

³¹ *Weekly Yellowstone Journal*, June 4, July 30, Sept. 3, Nov. 26, 1887.

³² Report of the State Veterinarian in the Montana Board of Stock Commissioners *Annual Report*, 1889, 17.

were more cattle on the Montana range than there had ever been before.³³

The hard winter had a desirable effect upon financial management on the range. A great deal of careless or dishonest book-keeping was eliminated when the companies guilty of it went out of business. By exaggerating the extent of winter loss many other losses due to crookedness and bad management were undoubtedly covered up. Cautious business practice is seldom associated with a boom but is one of the compensations and necessities of less prosperous times. After 1887, there was no more blind investing; the business was put on a sober basis.³⁴

Most northern cattlemen were persuaded that it was unwise to run cows and calves on the range without any provision for feed or shelter in case of a blizzard. It was very difficult to make such provisions for herds of more than 1500 or 2000. This meant that the herds were from this time on divided into two pretty distinct classes: the smaller outfits of mixed stock for which feed and shelter for at least part of the winter were furnished, and the big herds made up almost exclusively of steers brought in from the South and having no feed or shelter provided for them.³⁵ In the following years the rancher with his meadows and sheds gradually crowded out the cattleman with his great steer herd.

³³ As shown by annual output. Cf. footnote no. 1 on p. 123. Assessment records show the same thing.

³⁴ *Rocky Mountain Husbandman*, Aug. 18, 1887, and John Clay, *op. cit.*, 230.

³⁵ W. C. Barnes, *Western Grazing Grounds and Forest Ranges* (Chicago, 1913), 33; John Clay, *op. cit.*, 230; *River Press*, July 9, 1890; *Weekly Yellowstone Journal*, July 23, 1887 and June 21, 1888; *Daily Yellowstone Journal*, Mar. 28, 1889.

EIGHTEENTH CENTURY ESTIMATES OF BRITISH SHEEP AND WOOL PRODUCTION

BY G. E. FUSSELL AND CONSTANCE GOODMAN

When we set out to compose this essay, we were of the opinion that the difficulty of comparing contemporary estimates of the production of sheep and wool in England and Wales and so deducing what might be at least a probable and intelligent guess at the true state of this branch of farming had been exaggerated. We thought that if we referred to the innumerable pamphlets on the subject published continuously throughout the eighteenth century, we should be able to sift the grain from the chaff and make a selection of 'probables' that would hold some measure of agreement, and afford us an indication which we might assume as a measurably correct gauge of the activity of the industry.

We are now, however, inclined to accept the dictum of John James. "A more difficult task cannot be conceived," he said, "than that of estimating the quantity of wool grown in England at this date. One of the best commercial writers of modern times (McCulloch's *Dictionary of Commerce*) broadly and boldly asserts, that all the computations of the number of sheep we possessed, and their produce, are so *utterly contradicted and exaggerated* as to be nearly worthless, until the year 1800, when Mr. Luccock produced his well considered and laborious calculations. . . ."¹ James did not arrive at a close approximation in spite of his belief that Luccock's figures were of value, preferring to leave the possibility between the 12,000,000 fleeces stated by Salmon (see below) to be annually shorn and more than double that quantity stated by the British Woollen Manufacturers, which leaves a very wide margin. We here set down a few more estimates of the total number of sheep in England and Wales (several of the estimates

¹ *History of the Worsted Manufacture in England* (1857), 235 ff., and footnote, p. 320.

are for Great Britain and these are noted G. B., and the number enclosed in parentheses), but unfortunately these contain no more uniformity than the few James cited.

<i>Date</i>	<i>Authority</i>	<i>Number of sheep</i>
1696	Gregory King, <i>Natural and Political Observations and Conclusions upon the State and Condition of England</i> (Chalmers ed., 1810).....	11,000,000
1710	Charles D'Avenant, <i>New Dialogues upon the Present Postures of Affairs</i> , by the Author of the <i>Essay on Ways and Means</i> , II, 192.....	18,000,000
1712	<i>Weekly Packet</i> , August, 1712, cited in J. E. T. Rogers, <i>A History of Agriculture and Prices in England</i> , VII, 617. (G. B. calculated at average fleece of 4 lbs.).....	(12,804,000)
1731	Thomas Salmon, <i>Modern History; or, Present State of all Nations</i> , cited by John James, in <i>History of the Worsted Manufacture in England</i> (1857), 235.....	12,000,000
1736	William Allen, <i>Ways and Means to Raise the Value of Land: or, The Landlord's Companion</i>	12,000,000
1737	British Woollen Manufacturers, <i>The Sinking State of the Woollen Exportation Trade</i> . Cited in John Smith, <i>Chronicon Rusticum-Commerciale</i> (1747), II, 287. (G.B. 430,000 pks. at 4 lb. fleece.).....	(25,800,000)
1738	Samuel Trowell, <i>A Plan for Preventing the Clandestine Running of Wool</i> . (G.B. 500,000 pks. at 4 lb. fleece.)....	(30,000,000)
1739	Samuel Webber, <i>A Short Account of the State of our Woollen Manufactories</i> , 11. (G.B. and I. 4 lb. average fleece.)	(48,000,000)
1740	A Draper of London, <i>The Consequences of Trade</i> (4th ed.), 16. (E. & W.).....	43,680,000
1741	A Lover of His Country, <i>A Short Essay upon Trade in General</i> , p. 15, citing previous figures; his own calculation by one method, p. 34.....	21,373,078
	his own calculation by another method, p. 37.....	16,640,000 and 10% lambs
1741	Daniel Webb, in <i>Gentleman's Magazine</i> . Cited by Chalmers (see 1782 below).....	16,640,000
1744	English Woollen Manufacturer, <i>An Essay Presented</i> , 28 At 4 lbs. fleece.....	(34,400,000)
	430,000 pks. G.B. at 3 lbs. fleece.....	(25,800,000)
1750	William Ellis, <i>The Modern Husbandman</i> , IV, 141. (G.B. 500,000 pks. at 4 lbs. fleece.).....	(30,000,000)
1769	<i>A Description of England and Wales</i>	12,000,000
1770	Arthur Young, <i>A Six Months' Tour through the North of England</i> , IV, 493.....	28,989,480
1771	William Guthrie, <i>New System of Modern Geography, A New Geographical, Historical and Commercial Grammar</i> (2d ed.), I, 236. Number shorn.....	12,000,000

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Date	Authority	Number of sheep
1774	John Campbell, <i>A Political Survey of Great Britain</i> , 158..	10/12,000,000
1774	Arthur Young, <i>Political Arithmetic</i>	25,589,214
1782	George Chalmers, <i>The Propriety of Allowing a Qualified Exportation of Wool</i> . Cites four of above and some others untraced as noted.....	
1782	William Mugliston, <i>A Letter on the Subject of Wool</i> , 9. (E. 900,000 pks. at 4 lb. fleece.).....	54,000,000
1788	Thomas Day, <i>A Letter to Arthur Young, Esq. on the Bill then Depending in Parliament to Prevent the Exportation of Wool</i> , 7. (Mr. Austin states 600,000 pks.).....	36,000,000
1788	<i>A Speech on the Wool Bill</i> , 13. (600,000 pks.).....	36,000,000
1788	Sir Joseph Banks, "Instructions Given to the Council against the Wool Bill . . .," in <i>Annals of Agriculture</i> , IX, 499. (600,000 pks. at 5 lbs. fleece.).....	28,800,000
1788	Sir Peter Burrell, Speech in House of Commons, April 22. <i>Annals of Agriculture</i> , X, esp. 99-100.....	28,800,000
1791	Arthur Young, in <i>Annals of Agriculture</i> , XVI.....	25,589,214
1791	Sir John Sinclair, <i>Address to the Society for the Improvement of British Wool; Constituted at Edinburgh</i> , 32. He cites various of the above and accepts G.B. as 600,000 pks. of 5 lb. fleeces.....	(28,800,000)
1793	<i>A Plan for Establishing a Board of Agriculture and Internal Improvement</i> , 6. G.B.....	(20,000,000)
1798	John Middleton, <i>A View of the Agriculture of Middlesex</i> ..	32,000,000
1809	John Luccock, <i>The Nature and Properties of Wool</i> , 338, Table I.....	26,148,463

There is one point at which we had hoped to arrive by relating the various estimates of wool smuggled abroad in defiance of the law to the total production, but the pamphleteers are so wild and varied in their statements on this point that their figures are even less a guide than on other points. The following are the estimates of the quantity of wool owled (smuggled abroad):

Date	Authority	Packs of 240 lbs.
1701	<i>The Interest of England in Relation to the Woollen Manufacture</i> , cited in Smith's <i>Memoirs of Wool</i> (1747).....	30,000
1735	<i>The Golden Fleece; or The Trade . . . of Great Britain Considered</i> , 8.....	300,000
1739	British Woollen Manufacturers, <i>The Sinking State of the Woollen Exportation Trade</i> (1737). Cited by Smith, <i>op. cit.</i>	40,000
1739	Samuel Webber, <i>A Short Account of the State of our Woollen Manufactories</i> , 11.....	500,000
1744	An English Woollen Manufacturer, <i>An Essay Presented</i> , 28.....	40,000
1788	Thomas Day, <i>A Letter to Arthur Young, Esq. On the Bill then Depending in Parliament to Prevent the Exportation of Wool</i> . . .	10,000

By the nature of the circumstances it was almost incredible that anyone could be really well-informed. The smugglers certainly did not supply any statistics and the estimates, as may be gathered from their extreme variation, are the purest guesswork.

All that we can say, therefore, is that Luccock's figures of the total number are probably as accurate an estimate as we can expect relating to the end of the century, and that King's and Daniel Webb's figures are likely to represent the position at the beginning and in the middle years.

With regard to the size of the animals and the weight of their fleeces we can only tabulate the statements that have been made, and leave the reader to gather his own conclusions as to the trend of development in the different breeds.

WEIGHT OF CARCASS AND FLEECE

When we turn to the estimates of meat afforded by the average carcass and to the weight of an average fleece, we find little more agreement, probably because such a figure, considering the wide divergence of breeds, could in any event have no real significance, but for what it may be worth we have collected it where it occurs. The following are estimates of the carcass weight of the various breeds:

Date	Authority	Specific Breed*	General Average
1696	Gregory King, <i>State and Condition of England</i> (Chalmers ed., 1810)		32
1710	D'Avenant, <i>New Dialogues of the Present Posture of Affairs</i> , II, 193		28 sheep 18 lambs
1737	"Accounts of Holkham, 1731-1737," in J. E. T. Rogers, <i>A History of Agriculture and Prices in England</i> , VII, pt. 11	Norfolk (l.w.) 55	
1741	A Lover of His Country, <i>A Short Essay upon Trade</i> , 34		48
1749	William Ellis, <i>A Compleat System of Experienced Improvements</i> , 43 ff.	Kent Romney (l.w.) 120 Wiltshire (s.w.) 128 (in Hertford)	64-80

* (l.w. means long wool; s.w., short wool.)

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Date	Authority	Specific Breed	General Average
1770	Arthur Young, <i>Northern Tour</i> , II, 15, 140. IV table	Heath (s.w.) 48-56	
1771	Arthur Young, <i>Eastern Tour</i> , I, 36, 57. III	Kent Romney (l.w.) 96-100	
1771	Matthew Peters, <i>Winter Riches</i> , 10		80
1772	<i>The Diaries of a Duchess</i> , edited by James Grieg (1926)		72
1774	John Campbell, <i>Political Survey of Great Britain</i> , II, 149		40-56 smallest 64-88 largest ewe 44-160 largest wether
1775	Farmer (James Anderson), <i>Essays Relating to Agriculture</i> , 309		160-200 (not uncommon)
1778	Agricola Sylvan, in <i>The Farmer's Magazine</i> , III, 168 ff.	Lincoln (l.w.) 80-120+ Norfolk (l.w.) 48-72 (often)	
1781	"Castle Howard Accounts," in J. E. T. Rogers, <i>A History of Agriculture and Prices in England</i> , VII, 300	Norfolk (l.w.) 56-60 (15 carcasses)	
1785	Society of Farmers in —shire, <i>A Political Enquiry into the Consequences of Enclosing</i> , 54		50-60 (fat from best commons)
1785	Sir J. Sinclair, <i>History of the Public Revenue</i> , III, 203		80 (sheep) 50 (lambs)
1786	John Culley, <i>Observations on Livestock</i> , 100	Teeswater (l.w.) 120 Lincoln (l.w.) 100 Leicester (l.w.) 100 Devon (l.w.) 120 Norfolk (l.w.) 72 Southdown (s.w.) 72 Western (s.w.) Exmoor 64 Dorset 72 Hereford (s.w.) 56 Heath (s.w.) (Herdwick) 40 60	
1787	<i>Annals of Agriculture</i> , VIII, 63, 64 and 171	Wiltshire (s.w.) 104	
1787	William Marshall, <i>Rural Economy of Norfolk</i> , 363	Lincoln (l.w.) 60-100 Norfolk (l.w.) 40-60	

Date	Authority	Specific Breed	General Average
1789	William Marshall, <i>Rural Economy of Gloucester</i> , II, 79, 233	Cotswold (l.w.) 80 (ewes) 100 (wethers) Hereford (s.w.) Ryeland (64-72)	
1791	Sir John Sinclair, <i>Address to the Society for the Improvement of British Wool</i> , 9 and 32	Western (s.w.) 56	
1792	<i>Letters and Com. to the Bath Society</i> , VII, 354	Leicester (l.w.) 152+ Cotswold (l.w.) 190½ Southdown (s.w.) 104½ Wiltshire (s.w.) 172 Western (s.w.) Dorset } 184+ } These are live Mendip } weights 127+ }	
1795	<i>Letters and Com. to the Bath Society</i> , VIII, 371	Leicester (l.w.) 79½ Cotswold (l.w.) 76 Southdown (s.w.) 84½ Wiltshire (s.w.) 82½ Western (s.w.) Dorset 83½ Mendip 82	
1795	John Naismyth, <i>Observations on the Different Breeds of Sheep</i> , 21	Heath (s.w.) 40-68 ewes } 56-80 } Cheviot weddens }	
1795	<i>First Report of the Select Committee on Waste Lands</i> , 17. (Really copied from Sir John Sinclair. Eden, <i>State of the Poor</i> (1797), III, app. 88, also quotes these figures.)		80 sheep 50 lambs
798	Thomas Middleton, <i>General View of the Agriculture of Middlesex</i> , 488 (Figures repeated in 2d ed., 1807.)		72 sheep 64 lambs
1800	Caleb Hillier Parry, <i>Facts . . . Tending to Show the Advantage of . . . Clothing-wool</i> , 44 and 45	Lincoln } (l.w.) 140 } Carcasses Leicester } are live (l.w.) 130 } weight Southdown (s.w.) 125 Hereford (s.w.) 60	

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Date	Authority	Specific Breed	General Average
1803	George Culley, <i>On Livestock, in Hunter's Georgical Essays</i> , IV, 588, 593 and 597	Leicester (l.w.) 72-104 ewes 80-120 wedders Dishley Heath (s.w.) 48-64	
1803	John, Lord Somerville, <i>Facts and Observations Relative to Sheep, Wool, Ploughs and Oxen</i> (3d ed., 1809), 35, 72 and 79	Southdown (s.w.) 72 (ewes) Hereford (s.w.) 48	56 (flock of 1,000)

The weight of carcass in pounds per quarter arranged in Luc-
cock's classification is as follows:

	District	Annals of Agriculture 1784-1791	County Re- ports, 1st ed., 1794
<i>Long wool</i>			
Teeswater	Durham	14-18	23
	Yorkshire	30-40	
	Holderness	{ w. 24-30 e. 16-22	
Lincoln	Norfolk		15-22
Leicester	Warwick	{ 16-40 w. 22	
Kent	Romney Marsh	25-28	20/28
Devonshire	South Hampshire	15-30	
Cotswold	Gloucester	{ e. 22 w. 26	
<i>Short wool</i>			
South Downs	Cambridge	14-18	26
	Sussex Downs	w. 16-20	
	Wilts Downs	65-100	
	Wilts Pasture		
	Berkshire	20-30	
Wiltshire	Devon	12	
Western	Somerset	20-30	
Hereford	Worcester	36-40	
	Shropshire	11-14	
	Warwick	8-25	
	Derby	30-40	
	Chester	40-45 (carcass)	
	Yorks West Riding	14-15	
	Yorks East Riding	{ w. 16-20 e. 12-16	
Heath	Yorks North Riding	18-20	
	Cumberland	{ w. 10 e. 6-8	

The two most widely quoted estimates of average carcass weight, both contemporarily and by modern economic historians, are those first conjoint by Sir John Sinclair.² He quotes D'Avenant's figures of 28 lbs. and 18 lbs. for sheep and lamb in 1710 (see above), and an average of sheep and lamb killed in Smithfield, when he was writing, of 80 lbs. and 50 lbs. These figures, like those he gives of cattle, have been received very generally by modern historians,³ and were accepted as a general guide to progress by his contemporaries.⁴ The interval between these two estimates is really only seventy-five years, and we have been unable to trace the document from which Sinclair took his figures. In any case other estimates do not agree with these, or at least so far as they do agree they very much minimize the change in average carcass weight. As much and as little can be said of the fleece. Only in particular parts of the country was the change very marked, and then it was certainly towards long wool heavy fleeces.

The estimates of the weight of fleeces are as follows:

Date	Authority	Specific Breed*	General Average
1729	<i>An Humble Proposal to the People of England . . . Author of the Compleat Tradesman</i>	Kent Romney (l. w.) 4½	
17—	<i>Remarks upon Mr. Webber's Scheme and the Drapers Pamphlet</i>		4 (killed in Smithfield) 2½ (other estimates)
1741	<i>A Lover of His Country, A Short Essay upon Trade</i> , 34		3
1741	<i>Gentleman's Magazine</i> , cited by Chalmers (see below)		3
1750	William Ellis, <i>The Modern Husbandman</i> , IV, 134 ff.	Leicester (l.w.) 4½-6 Western (s.w.) 3-3½ Hereford (s.w.) 1+	

* (l.w. means long wool; s.w.; short wool.)

² *History of the Public Revenue* (1790), pt. 3, p. 201 and 203.

³ Ernle, *English Farming; Past and Present* (4th ed., 1927), 188 (with reserve); W. J. Ashley, *The Economic Organization of England* (1916), 135 ff.; William Cunningham, *The Growth of English Industry and Commerce* (1912), II, 560 footnote; Thorold Rogers, *Six Centuries of Work and Wages* (1884), 477 and 482.

⁴ *First Report of the Committee on Washes* (1795), 17; Eden, *State of the Poor* (1797), III, App. 88.

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Date	Authority	Specific Breed	General Average
1770	Arthur Young, <i>Northern Tour</i> , II, 15, 140. IV table	Teeswater (l.w.) 14-15 5 Heath (s.w.) 3	
1771	Arthur Young, <i>Eastern Tour</i> , I, 36, 57. III	Lincoln (l.w.) 5-8 Leicester (l.w.) 9	
1773	Francis Moore, <i>Considerations on the Exorbitant Price of Provisions</i> , 39		3½
1774	John Campbell, <i>Political Survey of Great Britain</i> , II, 149		1-5 smallest 12 largest ewe 14-18 largest wether
1778	Agricola Sylvan, in <i>The Farmer's Magazine</i> , III, 168 ff.	Lincoln (l.w.) 8-14 Norfolk (l.w.) 1-2	
1782	Nathaniel Forster, <i>An Answer to Sir John Dalrymple's Pamphlet</i> , 25	Lincoln (l.w.) 12	
1782	<i>Plain Reasons Addressed to the People of Great Britain</i> , 10	Lincoln (l.w.) 8-14	
1782	George Chalmers, <i>The Propriety of Allowing a Qualified Exportation of Wool</i> , 56	Hereford (s.w.) 9 (inclosure) 3½ (open field)	
1786	John Culley, <i>Observations on Live-stock</i> , 100	Teeswater (l.w.) 9 Lincoln (l.w.) 11 Leicester (l.w.) 8 Devon (l.w.) 9 Norfolk (l.w.) 2 Southdown (s.w.) 2½ Western (s.w.) Exmoor 6 Dorset 3½ Hereford (s.w.) 2 Heath (s.w.) (Herdwick) 2 3½	
1787	<i>Annals of Agriculture</i> , VIII, 63, 64 and 171	Lincoln (l.w.) 12 Wiltshire (s.w.) 2½	
1789	William Marshall, <i>Rural Economy of Gloucester</i> , II, 79, 233	Cotswold (l.w.) 7-9 Hereford (s.w.) Ryeland 1½	
1790	William Marshall, <i>Rural Economy of Mid-counties</i> , I, 404	Leicester (l.w.) 5-7 ewes 6-8 wether	
1791	Sir John Sinclair, <i>Address to the Society for the Improvement of British Wool</i> , 9 and 32	Western (s.w.) 3	5

<i>Date</i>	<i>Authority</i>	<i>Specific Breed</i>	<i>General Average</i>
1791	<i>Annals of Agriculture</i> , XVI, 82, 85, 182 and 364	Norfolk (l.w.) 1½ (Suffolk ewes) 6½ (" wether)	
1792	<i>Letters and Com. to the Bath Society</i> , VII, 354	Leicester (l.w.) 8+ Cotswold (l.w.) 7+ Southdown (s.w.) 3½ Wiltshire (s.w.) 4 Western (s.w.) Dorset 4½ Mendip 4	
1795	<i>Letters and Com. to the Bath Society</i> , VIII, 371	Leicester (l.w.) 5 Cotswold (l.w.) 5+ Southdown (s.w.) 3 Wiltshire (s.w.) 3 Western (s.w.) Dorset 3 Mendip 3½	
1795	John Naismyth, <i>Observations on the Different Breeds of Sheep</i> , 21	Heath (s.w.) 5	
1800	Caleb Hillier Parry, <i>Facts . . . Tending to Show the Advantage of . . . Clothing-Wool</i> , 44 and 45	Lincoln (l.w.) 8½ Leicester (l.w.) 7 Southdown (s.w.) 3 Hereford (s.w.) 1½	
1801	Rev. C. Cruttwell, <i>Tour Through the Whole Island</i>	Teeswater (l.w.) 8-10 Lincoln (l.w.) 9 Leicester (l.w.) 7 Devon (l.w.) 8 Cotswold (l.w.) 3 Wiltshire (s.w.) 3+ (horned Wilts. in glos.)	
1803	George Culley, <i>On Livestock</i> , in <i>Hunter's Georgical Essays</i> , IV, 588, 593 and 597	Leicester (l.w.) 8 Heath (s.w.) 3-4	
1803	John, Lord Somerville, <i>Facts and Observations Relative to Sheep, Wool, Ploughs and Oxen</i> , (3d ed., 1809), 35, 72 and 79	Southdown (s.w.) 3 (ewes) Hereford (s.w.) 2½	
1805	John Luccock, <i>The Nature and Properties of Wool</i> , 388, Table I	Average long wool fleece 7 lbs., 10 ozs. Average short wool 4½ fleece 3 lbs., 4 ozs.	

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The weights in pounds of fleece arranged in Luccock's classification are:

	<i>District</i>	<i>Luccock</i>	<i>Annals of Agriculture, 1784-1791</i>	<i>County Reports, 1st ed., 1794</i>
<i>Long wool</i>	Teeswater	Durham	9	7
		Yorkshire	8	10-11 7-9
	Lincoln	Holderness	8	8-10
		Lincoln Richland	9	7
		Lincoln Marsh	8	9½
		Lincoln Mixland	8	7-10
		Norfolk	7	12
		Cambridge	8	(5 only) 14
		Huntingdon	7	various
	Leicester	Leicester	7	7-8 (fen) w. 7-9
		Northampton	6	7-8½
		Rutland	5	
		Warwick	5	{ 6-15 w. 8-9
	Kent	Stafford	7	5-10
		Romney Marsh	7	{ w. 8-9 e. 6 { 13-14? 1
	Devonshire	Other Marshes	7	
		South Hampshire	8	8
	Cotswold	Gloucester	8	7
				{ 5-7 5-8
<i>Short wool</i>	Norfolk	Norfolk	2	2
		Suffolk	2½	2½
		Cambridge	4	2½-4
		Huntingdon	4½	3-4
		Bedford	5	3-4
		Essex	3	
		Sussex Downs	2	2-2½
	South Down	Sussex Lowland	3	2-2½
		Kent	3½	3½-3½
		Hampshire	3	(vary) 3
		Isle of Wight	3½	3-3½
		Surrey	3	
		Wilts Down	2½	2-3
		Wilts Pasture	3	3½, 2½
		Berkshire	3½	2½

<i>Short wool</i>	<i>District</i>	<i>Luccock</i>	<i>Annals of Agriculture, 1784-1791</i>	<i>County Reports, 1st ed., 1794</i>
Wiltshire	Oxford	various		{ 5 3½-5½
	Bucks	3		
	Herts	4½		
	Middlesex	4		
	Dorset	3¾	3½-5	
Western	Devon	4	7 (?)	7, 4¾
	Cornwall	4	4	
	Somerset	4½		
	Gloucester	various		
	Hereford	2		
Hereford	Monmouth	various	small	
	Worcester	3½	11-14	7
	Shropshire	2½	2	2-3
	Stafford	2		2
	Warwick	3	5-6	
Heath	Leicester	3½		3
	Lincoln	5½		
	Nottingham	various	various (crosses)	
	Derby	3	(N.L.) 6-8	
	Chester	various	1-1½	
	Lancashire	3½		2½-4
	Yorks West Riding	various	(Penistone)	
	Yorks East Riding	5	4-6	
	Yorks North Riding	various	5-6	
	(vary)			
	Westmoreland	3½	2	
	Cumberland	3¾	{ Herdwick 2 3-4	
	Durham	5	various (crosses)	
	Northumberland	5½	various	2-3
Welch	North Wales	2	various	4-6
	South Wales	1½	various	1½-2½

BREEDS

In order to estimate the change, it would be desirable to examine the development of the different breeds in number, size and weight of fleece. Such a decisive examination of the condition is, however, impossible, because the whole of the documents are unsatisfactory and vague; in addition many of them are, if

their statements can be accepted at face value, derived from one another, as so many polemics upon questions approached from a political angle are.

The primary difficulty of the subject is to decide how far the varieties known contemporarily as different breeds really had distinct characteristics. On this subject Sir Walter Gilbey was unable to come to any real decision when writing at the end of the century. "Great variety of breed was recognized at this period,"⁵ he says. "Richard Parkinson (*Treatise on the Breeding and Management of Livestock*, 1810) enumerates no fewer than thirty-seven different British breeds, including the Merino. George Culley (*Observations on Live-Stock*, 1807), however, says there were fourteen British varieties, remarking that the "numberless flocks that are everywhere spread over the face of this island are exceedingly intermixed and varied."

"In the absence of facilities for transport to the Shows which have since enabled farmers to study different breeds conveniently, and by reason of the stay-at-home life led by our grandfathers, local breeds had been developed and, in course of time, acquired their distinguishing characteristics."

It is true, as Sir Walter says, that sheep then held the most important place amongst livestock, and when Luccock gets out his results, he finds it necessary to enumerate practically every county in the country as a sheep-breeding district. But, although many writers on the subject were in the habit of calling the sheep in every county by its name and so multiplying breeds, Luccock does not consider it necessary to do this. He classifies the sheep of the country under thirteen heads, and we have followed his classification in forming our table of estimates of carcass weight and fleece, it being comparatively easy to select the type meant where more than one breed was common to a county.

While it is not possible to make a comparison between Luccock's figures for each county, or even for each breed, there were certain recognised districts in which estimates of the sheep population

⁵ *Farm Stock 100 Years Ago* (London, 1910), 31.

were made by different observers, and these can be compared with Luccock's figures for those districts. It is true that various discrepancies occur here, but while Luccock covers the whole country and in such a way as to give the most complete picture we have, we find that in those districts which were commonly commented upon as being notable for the extent of their sheep population, there is some concord between his estimates and those recorded by earlier investigators. Such districts were Dorset,⁶ Hereford, where the Leinster wool derived from the Ryland was early praised,⁷ the Chiltern of Oxford where the Down must have originated,⁸ and the moorlands of Stafford,⁹ the Wiltshire downs,¹⁰

⁶ *Travels of the Grand Duke Cosmo the Third, of Tuscany, through England, 1669* (1821), 145 ff.; *An Historical Account of Mr. Rogers' Three Years Travels, 1694*, 39-41; Daniel Defoe, *Tour through England* (1724), I, Letter II, 64, and II, Letter I, 45; William Ellis, *A Compleat System of Experienced Improvements, Made on Sheep, Grass-Lambs, and House Lambs* (1749), 41; Theophilus Botanista, *Rural Beauties* (1757), 201; *Rural Elegance Displayed*, 201; Cuthbert Clarke, *The True Theory and Practise of Husbandry* (1777), 124; Stebbing Shaw, *Tour to the West of England in 1788* (1789), 469.

⁷ [John] Worlidge, *Systema Agriculturae; The New Mystery of Husbandry Discovered and Layd Open* (3d ed., 1681); *An Historical Account* (1694), 112; James Brome, *Travels over Scotland, England and Wales* (1700), 16; John Mortimer, *The Whole Art of Husbandry, or, The Way of Managing and Improving of Land* (1707), 177; Daniel Defoe, *Tour through England* (1724), II, Letter III, p. 72; Richard Bradley, *A General Treatise of Husbandry and Gardening; Containing a New System of Vegetation* (1726), 160 ff.; Thomas Hale, *A Compleat Body of Husbandry* (1756), 219 ff.; Robert Brown, *The Compleat Farmer* (1759), 33 and 34; [John Ball], *The Farmer's Compleat Guide, Through all the Articles of His Profession* (1760), 404 ff.; John Campbell, *A Policical Survey of Great Britain* (1774), 149, footnote n.; Cuthbert Clarke, *The True Theory and Practice of Husbandry* (1777), 124; *An Enquiry into the Nature and Qualities of English Wools, and the Variations of Breed in Sheep* (1782), 4; James Baker, *A Picturesque Guide of Wales and the Marches* (2d ed., 1795), II, 97.

⁸ Robert Plot, *The Natural History of Oxfordshire, Being an Essay Toward the Natural History of England* (1676), 250; William Ellis, *op. cit.*, 43.

⁹ Robert Plot, *The Natural History of Stafford-shire* (1686), 257.

¹⁰ *The Diary of Celia Fiennes c. 1696* (1888), 10; James Brome, *op. cit.*, 40; Daniel Defoe, *Tour through England* (1724), Letter III, 26 (see also the other references to Defoe's *Tour*, *op. cit.*); Thomas Hale, *op. cit.*; *Passages from the Diaries of Mrs. P. L. Powys, 1756-1808*, (1899), edited by Emily J. Climenson, 173; Cuthbert Clarke, *op. cit.*, 124.

the Cotswolds,¹¹ Lincolnshire,¹² the Northern Counties,¹³ Romney Marsh,¹⁴ Leicester representing the Midland counties of Warwick, Buckingham and Northants as well,¹⁵ the Welsh mountains¹⁶ and norfolk¹⁷ with parts of Suffolk. Apart from the general observations made by the writers and tourists, some few estimates of the numbers of sheep in these districts at different times during the

¹¹ A. S., *The Husbandman, Farmer, and Grazier's Compleat Instructor* (1697), 56; Thomas Tryon, *England's Grandeur and Way to Get Wealth* (1699), 15; James Brome, *op. cit.*, 6; Daniel Defoe, *op. cit.*, II, Letter III, p. 12; John Mills, *A Treatise on Cattle* (1776), 329; *A Tour to Cheltenham Spa* (1783), 60; Stebbing Shaw, *op. cit.*, 257.

¹² A. S., *op. cit.*, 56; James Brome, *op. cit.*, 142-143; John Mortimer, *op. cit.*; Daniel Defoe, *Tour through England* (1724), I, 8, and II, Letter III, p. 141; Richard Bradley, *op. cit.*; William Ellis, *op. cit.*; Thomas Hale, *op. cit.*; Robert Brown, *op. cit.*; John Ball, *op. cit.*; John Campbell, *op. cit.*; John Mills, *op. cit.*; Cuthbert Clarke, *op. cit.*, 117; *An Enquiry into the Nature and Qualities of English Wools*, *op. cit.*

¹³ A. S., *op. cit.*; John Mortimer, *op. cit.*; Richard Bradley, *op. cit.*; Thomas Hale, *op. cit.*; Robert Brown, *op. cit.*; Charles Varlo, *A New System of Husbandry* (4th ed., 1774), II, 86 ff.; John Mills, *op. cit.*; Cuthbert Clarke, *op. cit.*, 117, 124; William Hutchinson, *A View of Northumberland, with an Excursion to the Abbey of Melrose, in Scotland, in the year 1776* (1778), 447; John Housman, *A Typographical Description of Cumberland, Westmoreland, Lancashire, &c* (1800), 59, 101, 173.

¹⁴ A. S., *op. cit.*, (John Macky), *A Journey through England* (1714), 54; Daniel Defoe, *op. cit.*, Letter II, p. 53; William Ellis, *op. cit.*

¹⁵ A. S., *op. cit.*; John Mortimer, *op. cit.*; Daniel Defoe, *op. cit.*, and II, Letter III, p. 134; Richard Bradley, *op. cit.*; William Ellis, *op. cit.*; Thomas Hale, *op. cit.*; Robert Brown, *op. cit.*; John Ball, *op. cit.*; John Campbell, *op. cit.*; John Mills, *op. cit.*; Cuthbert Clarke, *op. cit.*, 123; William Bray, *Sketch of a Tour into Derbyshire and Ygrkshire* (2d ed., 1783), 75; Stebbing Shaw, *A Tour in 1787 from London* (1788), 18.

¹⁶ John Mortimer, *op. cit.*; Richard Bradley, *op. cit.*; William Ellis, *op. cit.*; Thomas Hale, *op. cit.*; Robert Brown, *op. cit.*; Joseph Cradock, *Letters from Snowdon Descriptive of a Tour through the Northern Counties of Wales* (1770), 98; John Dove, *Strictures on Agriculture* (1770), 75; John Campbell, *op. cit.*; John Mills, *op. cit.*; Thomas Pennant, *A Tour in Wales in 1773* (1777), I, 426, II, 85, 161, 210, 351, and 365; James Baker, *op. cit.*, III, 221; Arthur Aikin, *Journal of a Tour through North Wales and Part of Shropshire* (1797), 22, 49, 94, 129, 152; The Rev. John Evans, *A Tour through Part of North Wales in the Year 1798, and at other Times* (1800), 50, 53, 206; The Rev. John Evans, *Letters Written During A Tour of South Wales in the Year 1803, and at other Times* (1804), 191, 311.

¹⁷ Defoe, *Tour through England* (1724), I, 93; Edward Laurence, *The Duty of a Steward to His Lord, to which is Added an Appendix, Showing the Way to Plenty, Proposed to the Farmers*; (1727), xxviii; Arthur Young, *A Six Week's Tour through the Southern Counties of England and Wales* (1768), 45; *An Enquiry into the Nature and Qualities of English Wools*, *op. cit.*

century have been collected and tabulated below. The basis of the early estimates is not known, but it was probably nothing more substantial than the common talk of the districts, which may have been founded in accurate experience of the sales at the local markets, but is not likely to be more or less accurate than commonly held opinions are. Luccock's principle of estimating the sheep population of each county was to estimate the acreage on which sheep were grazed, to take the local opinion of the number of sheep kept per acre and thus to arrive at a total for the county. There are obvious flaws in such a method, but it has at least a firmer basis than most of the earlier attempts.

The following is a tabulation of the estimates of the number of sheep (and in a few instances, the quantity of wool produced) in the different districts:

Date	Authority	District	Number of Sheep
1724	Defoe, <i>Tour</i> , I, Letter II, 64	Dorset	600,000
1724	Defoe, <i>Tour</i> , II, Letter I, 45	Wilts Downs	2/3,000,000 formerly
1724	Herman Moll, <i>New Description of England and Wales</i>	Dartmoor	100,000
1729	Author of <i>The Compleat Tradesman, An Humble Proposal to the People of England</i> , 37	Romney Marsh	141,330
1735	Gentleman of the Inner Temple, <i>A Description of the Diocese of Norwich or Norfolk and Suffolk</i> , 3	Tilney Smeathe	30,000
1746	Samuel Simpson, <i>The Agreeable Historian</i> (Glos.)	Cotswold	400,000
1735	Dr. Richard Pococke's "Travels Through England," in <i>Camden Society</i> (n.s.), XLII, 138	Dartmoor	100,000
1751	Malachy Postlethwayt, <i>The Universal Dictionary of Trade and Commerce</i> (Dorset.) (Glos.)	Dorset Cotswold	600,000 400,000
1753	Defoe, <i>Tour</i> (5th ed.), I, 322	Dorset	600,000
1768	<i>Rural Elegance Displayed</i> , 201	Dorset	600,000
	<i>Annals of Agriculture</i> , II, 94	Romney Marsh	100,000
	<i>Annals of Agriculture</i> , XV, 309	Norfolk & Suffolk	700,000
1789	Stebbing Shaw, <i>A Tour to the West of England in 1788</i> , 469	Dorset	6/700,000
1793	John Claridge, <i>County Report</i> , 7	Dorset	800,000

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Date	Authority	District	Number of Sheep
1794	Thomas Davis, <i>County Report</i> , 19	Wilts Downs	150,000 lambs bred annually
	R. Fraser, <i>County Report</i> , 53	Dartmoor	8,000
	R. Warner, <i>County Report</i> , 53	Isle of Wight	40,000
1795	John Naismith, <i>Observations on the Different Breeds of Sheep</i> , 28	Northumberland	200,000
1798	John Middleton, <i>County Report</i>	Middlesex	700,000
1800	Caleb Hillier Parry, <i>Facts . . . Tending to Show the Advantage . . . of Producing Clothing-wool . . .</i>	Hill Pastures	2,333,332
1801	Rev. Clement Crutwell, <i>A Tour Through the Whole Island of Great Britain</i> , xxxi	{ Ilsley Berkshire	250,000 sold annually
	lxx and lxxi	Blakemore	800,000 (27,900 lbs. of wool)
		{ Vale Dorset	150,000 sold annually
	lxxxix	Hants	350,000
	xev	Isle of Wight	40,000
	elxi	Norfolk	30,000
	elxxxix	Wiltshire	500,000
1809	Author of <i>A Tour in Ireland, Journal of a Tour to the Western Counties in 1807</i>	Dorset	800,000 (279,000 lbs. of wool)
1809	Rev. Richard Warner, <i>A Tour Through Cornwall in the Autumn of 1808</i> , 43	Dartmoor	20,000
1809	John Luccock, <i>An Essay on Wool</i> , Table I	Dorset	632,240
		Wilts Downs	583,500
		Romney Marsh	185,000
		Norfolk	38,500 (long wool)
		Devon	436,850
		Norfolk	683,704
		Suffolk	497,000
		Northumberland	538,162
		Middlesex	45,000
		Berkshire	306,600
		Hants	516,600
		Isle of Wight	61,000

A comparison of the earlier estimates with Luccock's calculations and the few relative estimates made by the County Reporters in their local enquiries reveals a striking similarity of the supposed output in some districts during practically the whole

century and equally striking variations in others. Possibly the sheep population of Dorset remained very much the same, as the figures seem to show, but it seems not unlikely that the numbers on the Romney Marshes fluctuated to the extent shown. Of the Wiltshire Downs Defoe's early statement looks incredible in the light of the agreement of the later figures, while in Norfolk the long wool sheep appear to have remained about the same, the total numbers in the two counties of Norfolk and Suffolk having somewhat increased by the end of the century. All this is, however, no more than surmise, based upon figures which are not in the slightest degree irrefragable, and in the end we find the figures presented above no safer guide to the stability or fluctuation in the total stock than the widely divergent numbers of the total estimates themselves.

IMPROVEMENT IN SHEEP PRODUCTION

It is true that a statement was made in the *Gentleman's Magazine* for 1739 that "it be certain that we grow one Third more Wool than we did twenty years ago. The great and surprising Improvement of our Lands throughout the whole Kingdom, during that period of time is the happy cause of the aforesaid Increase of our Wool,"¹⁸ but even if we accept this optimism as veracious it does not help us. Using that measure of the increase it is hardly possible, in the light of the modern figures collected in Agricultural Statistics (see below) that the stock of 11 million stated by King may have risen to Daniel Webb's 16½ million by 1741, or that D'Avenant's 18 million may have increased to the British Woollen Manufacturers 25¾ million. We are thus left with two sets of quite incompatible figures.

Although it is impossible to decide definitely which is the more probable of these two sets of figures, we are inclined to favour the lower as the more likely to be approximately correct. This is partly due to an impression gained from the reading of the various publications, an impression it is quite impossible to document, and partly to other reasons.

Taking the figures given by the *Golden fleece* (1739) it is assumed that one pack of wool would provide work for 58 persons

¹⁸ IX, 479.

for a week. The 430,000 packs estimated by the British Woollen Manufacturers would thus provide annual employment for about half a million persons. In 1750 the population was about six million,¹⁹ and Malacky Postlethwayt, using King's family classification,²⁰ decided that of this six million rather more than a quarter million were artisans and handicraftsmen, about 1,400,000 were labouring people and out-servants, while cottagers and paupers amounted to 1½ million in round numbers. All these figures include the families and do not relate to numbers employed, but as many women and children were working in most trades, that does not particularly matter. Of the three million workmen's families therefore, about one-sixth would have been employed in the woollen and worsted manufacture, but if we accept the 266,993 packs of *A Lover of his Country*, this proportion is reduced to one-tenth. We cannot, of course, determine the basis of Postlethwayt's figures, but clearly a large number of the labouring people and out-servants were employed in agriculture, so that there is the more reason to reduce the number employed in the woollen manufacture.

King's figures for the three classes mentioned are not so very different from Postlethwayt's, but his total population also is stated at 5½ million, so they could not well be.²¹ Allowing his 11 million an average fleece of 4 lbs., about 90,000 less people were employed in the Woollen manufacture in 1696.

The rise to Luccock's "well substantiated" figure of twenty-six million sheep in 1803 is not incredible if we consider what has happened in the past sixty years. The stock of sheep in England and Wales as given in *Agricultural Statistics* was:

<i>Average of 10 years</i>	<i>Number in millions</i>
1867-1876 rep. 1871 approx.	22 (average for 1869-76 only)
1877-1886 rep. 1881 approx.	19½
1887-1896 rep. 1891 approx.	19½
1897-1906 rep. 1901 approx.	18½
1907-1916 rep. 1911 approx.	18½
1917-1926 rep. 1921 approx.	15

¹⁹ *Census* (1821), xxxii ff.

²⁰ *Universal Dictionary of Trade* (1755), II, 438.

²¹ *Chamber Ed.* (1810), 48.

and the number from 1920 to 1923 was only about thirteen million.

DEVELOPMENT OF MUTTON SHEEP

Not only was population increasing rapidly, but the efforts of Bakewell and Ellman²² and others were having their effect during the second half of the eighteenth century. It would be laborious to discuss them here, but they must be mentioned. Lord Ernle emphasized the work done by Bakewell in the Times of the 18th July, 1929. Before the industrial revolution the producers of bread and meat, he says, had largely outnumbered those who were merely consumers. With the development of industrial life, the proportions were violently disturbed. From crowded haunts of labour and of trade rose the cry for food. An agricultural opportunist, Bakewell saw the coming change, and, so far as meat was concerned, knew how it should be met. On enclosed land, his 'New Leicesters' were prepared for the market in two years, where other breeds required three or four. That Bakewell was fully conscious of what he was doing is evidenced in his own words. When told that his mutton was too fat, was coarse in grain and lacking in flavour, he replied that his mutton was not for the sideboards of fine gentlemen, but for the masses.²³

Before this necessity arose, the impression to be gained from the literature is that wool was more valuable than the flesh of the beasts, which was useful as 'harvest beef.'²⁴

The meat now came into its own, and one consequence was the widespread imitation of Bakewell's methods, and a production of a saleable carcass at an earlier age than heretofore.²⁵ This con-

²² See J. A. S. Watson, "Bakewell's Legacy" in the Royal Agricultural Society of England *Journal*, LXXXIX (1928), 22-32; and E. Walford Lloyd, "John Ellman of Glynde: His Life Work and Correspondence," in *ibid.*, 32-50.

²³ *Ibid.*

²⁴ William Marshall, *The Rural Economy of Norfolk* (1787), 362.

²⁵ See the *County Reports* as follows: Bedford (1794), 32; Berkshire (1794), 44; Derby (1794), 23; Dorset (1793), 8; Gloucester (1794), 10; Kent (1794), 102; Lincolnshire (1794), 61; Norfolk (1794), 33; Northumberland (1794), 22; Rutland (1794), 15; Sussex (1793), 49; Wiltshire (1794), 124; Worcester (1794), 11; North Riding of Yorkshire (1794), 64.

centration on the carcass as against the wool producing qualities of the sheep led to a decline in the production of fine wool, and on this account those who were convinced that the woollen trade and manufacture was declining, became increasingly declamatory.²⁶ Modifications of Bakewell's ideas also led to a large number of experiments in the crossing of different breeds, and this became so universal that it renders the mass of information relating to weight of fleece and carcass contained in the second edition of the County Reports impossible of classification in such a way as to be comparable with other remaining figures. This was the period at the end of the century when breeds were in a state of flux, before the comparatively small number of well defined modern breeds had emerged from this chaos of experiment later in the nineteenth century.

²⁶ John Mills, *A Treatise on Cattle* (1776), 324; A Gentleman (of Lincolnshire), *Consideration on the Present State of the Wool Trade* (1781), 6; Sir John Dalrymple, *The Question Considered, Whether Wool Should be Allowed to be Exported* (1782), 6; *An Enquiry into the Nature and Qualities of English Wools* (1782), 21; William Mugliston, *A Letter on the Subject of Wool* (1782), 10; *Plain Reasons Addressed to the People of Great Britain* (1782), 10; Also other pamphlets of this year. Also *A Tour to Cheltenham Spa* (1783), 62; Thomas Stone, *An Essay on Agriculture* (1785), 186 ff.

BOOK REVIEW

THE RANGE CATTLE INDUSTRY. By Edward Everett Dale. Norman, University of Oklahoma Press, 1930. 216 p., Illus., maps. \$4.

All who are familiar with even the bare facts of Professor Dale's life will accent to his peculiar qualifications of background, environment, and scholastic training to undertake this particular historical study. He was born in Texas and grew up on a homestead near the border of the Kiowa-Comanche Indian Reservation. After completing a common school he worked as a cowboy and ranchman for five years. He hunted and trapped during two winters, kept post office and worked in a store that supplied whites and Indians, and served as deputy sheriff. He received his bachelor's degree from the University of Oklahoma in 1911; his master's degree from Harvard in 1914; and his doctor's degree from the same institution in 1922, his dissertation being *A History of the Range Cattle Industry in Oklahoma*. During the past ten years he has become widely known as an editor and writer of monographs and article on the range cattle industry and other of the broader phases of Southwestern history. He became an instructor in the history department at the University of Oklahoma in 1914; since 1924 he has served as the department's head. In this capacity he is doing much to collect and preserve the historical records of the Southwest. This phase of his work takes its most substantial form in the collection of material on the American Indian and his place in American history which is being gathered at the University of Oklahoma. During 1926-1927 he served as specialist in the economic history of the West on the committee organized by the Institute for Government Research at the request of Hubert Work, recently Secretary of the Interior, which made a detailed study of the Indian affairs in the United States. The work on the volume under review was begun

in 1924 under the auspices of the Bureau of Agricultural Economics of the United States Department of Agriculture.

In view of these biographical facts it is not surprising to find Professor Dale stating the point of view from which he has undertaken this volume in the following manner:

"Any history of the ranch cattle industry of the Great Plains region is merely a part of the history of a much larger movement, that of the settlement and development of the American wilderness. This is a movement that has been characterized by the appearance of successive stages of society—that of the hunter and trapper, the herder, and the pioneer farmer following one another within the same region in more or less rapid succession according to conditions of topography and climate."

One of the most remarkable, and certainly the most romantic and picturesque, phase of American agricultural history is the formation of the so-called "cow country," the range cattle industry on the Great Plains, during the decades immediately following the Civil War within less than twenty years the border of herding, recognized as a stage in the frontier period of the history of each community and physiographic province in the westward advance across the American continent came to cover an area greater than all that part of the United States east of the Mississippi devoted to crop raising. Within almost as short a time the inroads of the homesteader taking over most of the land suitable for cereal crop production and accompanying factors caused the breaking up of the largest ranches and a shift in the industry from large to comparatively small producers. As Professor Ernest S. Osgood of the University of Minnesota has indicated in his *The Day of the Cattleman* (Minneapolis, University of Minnesota Press, 1929) and his "The Cattleman in the Agricultural History of the Northwest" in *Agricultural History*, vol. 3, no. 3, July 1929, p. 117-130, the story is continued in the history of the fenced ranches of the last thirty years. In this book Professor Dale limits himself to relating in brief form the history of the growth and subsequent decline of the range cattle industry, and of the establishment and development of relations between that region and the corn belt.

As an historical study, the subject had its peculiar difficulties. The range cattle industry as a great enterprise "came into existence within a few years, rose quickly to enormous proportions, and then declined with almost equal rapidity. As a result it never became thoroughly standardized. Carried on in a great area varying in topography and climate it was inevitable that conditions and, in consequence, methods of operation should also vary considerably in different portions of the range area. A highly technical business, it was never well understood except by the comparatively few persons engaged in it, most of whom have long since died. In many cases lax business methods prevailed. Few records were kept and those that were have in many instances disappeared." Treating a subject as this one with its many ramifications and phases within a comparatively limited space and working through the vast mass of available material on this particular subject were also a great tax on the author's time and energy. In spite of these difficulties Professor Dale has succeeded very well with his task.

The chapter titles—Texas at the close of the Civil War; The Central and Northern Plains; The Northern Drive; Ranching on the Central and Northern Plains to 1880; Ranching on the Central and Northern Plains, 1880 to 1900; Texas and the Southwest; The Range Cattle Industry in Oklahoma; The Range and the Corn Belt; The Dawn of a New Day—indicate the method of treatment. Many readers will want more details on such phases of the subject as geographic conditions affecting ranching, financing, transportation, feeding, breeds and breeding, fencing, and conservation of the ranges, but the author has indicated in his introduction that he is aware of this inadequacy.

Seven pertinent photographs and eighteen maps add much to the volume. Probably it can safely be said that the maps are better and more complete than those in other recent studies on the same subject. The ten page bibliography will also be appreciated by the users of the book, particularly the concise but discriminating annotations.—*Everett E. Edwards, Associate Agricultural Economist.*

NEWS NOTES AND COMMENTS

EARLY MILLING IN MINNESOTA

The importance of Paul R. Fossum's article on "Early Milling in the Cannon River Valley" in *Minnesota History* for September 1930, lies in its being a careful study of early milling in the section of the Cannon River Valley of Minnesota between Northfield and the southern limits of Faribault, a distance of scarcely twenty miles by river and the site of no less than fifteen flour mills in certain of which was developed and popularized the middlings purification process. This process revolutionized flour-milling in America and led to the rise of the spring wheat belt in the northwest and Minneapolis as one of the greatest milling centers in the world. The article also appears in the *Northwestern Miller* for October 29, 1930, together with a comment by William C. Edgar.

THE PALIMPSEST

Several recent numbers of the *Palimpsest*, published by the State Historical Society of Iowa, are of considerable interest to workers in agricultural history. The number for February 1930, is devoted to rural fiction and includes "Exponents of the Pioneers," a study of Herbert Quick and Hamlin Garland, by Frank Luther Mott; a study of Emerson Hough by Pauline Grahame entitled "A Novelist of the Unsung;" and "The Younger School" by John T. Frederick. The June number has three valuable articles and an editorial comment on the Iowa agricultural periodicals: "The Iowa Homestead," by C. R. F. Smith; "Wallaces' Farmer," by Arthur T. Thompson; and "The Meredith Publications," by Peter Ainsworth. The July number pertains to agriculture, the titles of the articles being as follows: "The Civilization of Corn," by H. A. Wallace; "The Passing of the Herds," by John A. Hopkins, Jr.; "The Coming of the Legumes," by H. D. Hughes; "Hogs to Feed," by Donald R. Murphy (also

printed in *Wallaces' Farmer and Iowa Homestead* for November 8, 1930); and "Immigrants from Russia," by A. T. Erwin. This last article is a brief consideration of the work of Professor J. L. Budd in importing varieties of trees and shrubs from Russia and China for trial in Iowa. The same number has an editorial note by John Ely Briggs on the master farmers movement in America.

BOOKS AND ARTICLES

The *Economic History Review* for January, 1930, contains many reviews and bibliographical references to items pertinent to agricultural history which the lack of space does not permit being cited in this place.

"Stages in Economic History," the paper read by Professor N. S. B. Gras at the meeting of the American Economic Association, Washington, D. C., December 27, 1929, is printed in the *Journal of Economic and Business History* for May, 1930.

All of the articles in *Economic Geography* for April, 1930, are of interest. It includes the first instalment of Griffith Taylor's "Agricultural Regions of Australia." Dr. Taylor was head of the department of geography at the University of Sydney from 1920 to 1928 and is now professor of geography at the University of Chicago. This number also includes the eighth instalment of Dr. Oliver E. Baker's "Agricultural Regions of North America." It deals with the Pacific Subtropical Crops Region. The other articles are: "Cane Sugar Production in the British Empire," by C. J. Robertson, geographer, St. Mary's Training College, Middlesex, England; "Rainfall and Wind Conditions Retarding Tropical Development," by Stephen S. Visser, geographer, Indiana University; and "Land Values in the Blue Grass and Nashville Basins," by Raymond E. Murphy, geographer, University of Wisconsin.

Economic Geography for July 1930, contains the following articles: Agricultural Regions of Australia—Instalment II, by Griffith Taylor, professor of geography, University of Chicago;

The Pastoral and Agricultural Industries of Kenya Colony and Protectorate, by Earl C. Case, geographer, University of Cincinnati; Economic Adjustments in Bavaria, by Hubert A. Bauer, associate in geography, University of Washington; Agricultural Regions of North America—Part VIII—The Pacific Subtropical Crops Region (continued), by Oliver E. Baker, senior agricultural economist, U. S. Department of Agriculture; The Forest of Dean in Gloucestershire, by E. Muriel Poggi, geographer, University of Illinois.

Economic Geography for October 1930, includes the following articles: The Great Basin, by J. F. Bogardus; The Sugar Industry of Mauritius, by C. J. Robertson; Agriculture and Commerce of Uganda, by Earl C. Case; Lower Rio Grande Valley of Texas, by William T. Chambers; Land Utilization in the St. Francis Basin, by Sam T. Bratton; The Lime Industry at Rockland, Maine, by Grant E. Finch and George F. Howe; Mountain Tops and Lowlands of Colombia, by Albert C. Smith; and Glacial Topography and Agriculture in Central Massachusetts, by Berton R. Millington.

The *Geographical Review* for October 1930, includes the following articles—The Agrarian Problem in Chile, by George McCutchen McBride; The Guano Islands of Southwestern Africa, by Arthur C. Watson.

In *Upon Slavery in Ptolemaic Egypt* (New York, Columbia University Press, 1929), Professor William Linn Westermann publishes a papyrus from the Fayum recently acquired by Columbia University in facsimile transliteration and translation, and makes extensive comments thereon.

In "Über den Scheffel und Seine Teile" in the *Zeitschrift für Ägyptische Sprache und Altertumskunde* for 1930 (v. 65, p. 42-49) Otto Neugebauer discusses calculations in bushel-parts, the bushel and its multiples and divisions, and the paleography of the bushel-parts and concludes with a summary of the author's thesis.

Under the title "Population and Agriculture in Roman Britain; A Reply" in *Antiquity* for March 1930, H. J. Randall replies to Collingwood's contentions in *Antiquity* for September 1929, that Roman Britain had a farming population of 200,000 or 250,000 supporting an urban and military population of 250,000 or 300,000.

Isabel Frances Grant's *The Social and Economic Development of Scotland before 1603* (Edinburgh, Oliver and Boyd, 1930) contains several historical chapters on agriculture in Scotland prior to 1603.

In his *Teinds and Agriculture; An Historical Survey* (London, Humphrey Milford; Oxford Univ. Press, 1930), Alexander A. Cormack considers the Teind system from its origin to the present time.

The Economic and Social History of an English Village; Crawley, Hampshire, A.D. 909-1928, by N. S. B. Gras and E. C. Gras, has been published by the Harvard University Press.

"The Housing of the Rural Population in the Eighteenth Century" is the title of an article by G. E. Fussell and Constance Goodman in *Economic History* for January 1930, which constitutes a survey, county by county, of the farm houses and laborers' cottages of England and Wales during the eighteenth century.

Handbook of the Collections Illustrating Agricultural Implements and Machinery; A Brief Survey of the Machines and Implements Which Are Available to the Farmers with Notes on Their Development (London, His Majesty's Stationery Office, 1930), by A. J. Spencer and J. B. Passmore, is a guide to the agricultural implements section of the Museum of Science at South Kensington.

The *Transactions of the Yorkshire Agricultural Society* for the year 1929 have been published. The main historical article in this volume (No. 87) is entitled "Observations on 'Blackface Sheep,' Their Origin and History" by Sir Alfred E. Pease, Bart.

The article by R. W. Bell on "Jersey Cattle" also contains historical material.

W. M. Elkington's "Poultry in Agriculture" in the *Journal of the Royal Agricultural Society of England* for 1929 is an account of the developments in the poultry industry in Great Britain in the last thirty-five years.

Donald Grove Barnes' *A History of the English Corn Laws from 1660-1846* (London, George Routledge and Sons, 1930) is one of the London School of Economics Studies in Economic and Social History.

"Seventy Years of English Corn Growing," the substance of an address by Lord Ernle given at the Agricultural School at Cambridge, appears in *Nineteenth Century and After* for April 1930.

Thomas Carson McCormick's *Agriculture for Rural Teachers* (New York, The Macmillan Co., 1929) has a brief chapter entitled "The History of Agriculture."

R. L. Banerji's "Land Surveying and the Early History of Its Development" in the *Modern Review* for August, 1929, traces the subject from about 1530 B. C. when the Chaldeans knew the principle of the right angled triangle to the work of the famous Ujjam Observatory (1699-1728).

"Indian Corn," by James B. McNair, has been issued by the Field Museum of Natural History in Chicago as Leaflet No. 14. It contains material on origin, geographic distribution, varieties, used by the American Indian, and modern industrial and experimental products.

C. R. Fay's *Two Empires* (Toronto, Univ. of Toronto Press, 1928) is a comparison of the modern British and the Roman empires and was inspired by the appearance of Professor M. Rostovtzeff's *Social and Economic History of the Roman Empire*. One of the eight sections of the essay is devoted to agriculture.

An article by Walter V. Kell entitled "Indians Discovered Nitrate of Soda in South America—Now Used for 100 Years on North American Farms" appears in the *Hoosier Farmer* for February 15, 1930.

The article by Bryan Hamilton, county superintendent of schools, Elkins, West Virginia, on "The Conestoga Wagon" in the *Proceedings of the New Jersey Historical Society* for October, 1929, gives material on the origin and also a description of this picturesque and historically important means of conveyance.

C. H. Laub's "British Regulation of Crown Lands in the West; The Last Phase, 1773-1775" appears in the *William and Mary College Quarterly* for January, 1930.

Agnes M. Whitson's "The Outlook of the Continental Colonies on the British West Indies" in the *Political Science Quarterly* for March, 1930, is a study of the effect of the intercolonial trade on the everyday life and opinions of the northern colonists.

Whitney H. Shepardson's *Agricultural Education in the United States* begins with an introductory chapter on the nation and its agriculture. A description of the system of agricultural education in the United States and the place which the land-grant colleges hold in this system follows. The author then traces the history of these colleges, discusses their function, the way they are fulfilling it, and the means at their disposal. The study ends with suggestions regarding future developments. The book is commented on at length in an editorial review in the *Experiment Station Record* for March, 1930.

An extensive and valuable biographical sketch of Edwin West Allen, 1864-1929, chief of the Office of Experiment Stations at the time of his death on November 11, 1929, appears in the *Experiment Station Record* for December, 1929.

Charles H. Leete's "The St. Lawrence Ten Towns" in the *Quarterly Journal of the New York State Historical Association* for

October, 1929, is an historical study of the ten townships of 100 square miles each, lying two deep along the St. Lawrence and created by the New York legislature in 1786.

An interesting bulletin containing agricultural history material is George Fiske Johnson's *Agriculture in Pennsylvania; A Study in Trends, County and State, Since 1840*, issued by the Pennsylvania Department of Agriculture as General Bulletin No. 484. Mr. Johnson also has a short article entitled "Apples—200 Years Ago and Now" in the *Pennsylvania Farmer* for March 29, 1930.

A series of historical articles by Henry W. McLaughlin on "Beef Cattle in the Highlands of the Virginias" are appearing in the *Southern Agriculturist*. The first four instalments appeared in the numbers for March 1, March 15, April 15, and June 15, 1930.

A series of valuable historical articles by T. C. Richardson on the general subject of cotton in the United States are appearing in current issues of *Farm and Ranch*, beginning January 18, 1930.

The January, 1930, number of the *Journal of Negro History* includes an article by Avery O. Craven on "Poor Whites and Negroes in the Ante-Bellum South" and one by William M. Brewer on "Poor Whites and Negroes in the South Since the Civil War."

James A. Padgett's "The Status of Slaves in Colonial North Carolina" appears in the *Journal of Negro History* for July, 1929.

In the *South Atlantic Quarterly* for January, 1930, there is an interesting article on the "Economic Background of Southern Populism" by Hallie Farmer.

Another chapter in the history of Populism is given by Professor Carroll H. Wooddy of the University of Chicago in an article

entitled "Populism in Washington: A Study of the Legislature of 1897" in the *Washington Historical Quarterly* for April, 1930.

The *North Carolina Historical Review* for April, 1930, contains the second instalment of Professor Francis B. Simkins's valuable historical study of South Carolina agriculture under the title "The Solution of Post-Bellum Agricultural Problems in South Carolina."

The *Southern Planter* for January 1, 1930, is a ninetieth anniversary number and contains an historical sketch of the periodical by Dr. T. K. Wolfe under the title "A Long Life and High Ideals." Other historical articles included are: Social Development in the South During the last Ninety Years, by Carl C. Taylor; Ninety Years of Rural Education in the South, by Edgar W. Knight; Ninety Years of Farm Machinery, by Charles E. Seitz; Ninety Years of Fertilizers, by H. W. Warner; Ninety Years of Livestock, by D. S. Burch.

The *American Historical Review* for April, 1930, includes a brief study of the "Life Span of Mississippi Slaves" by Charles S. Sydnor of the University of Mississippi.

R. S. Cotterill's "The National Land System in the South, 1803-1812" appears in the *Mississippi Valley Historical Review* for March, 1930. The same number includes "Trade in Frontier Ohio" by Randolph C. Downes.

An article by T. D. Clark on "Live Stock Trade Between Kentucky and the South, 1840-1860" appears in the *Register of the Kentucky State Historical Society* for September, 1929.

J. Lee Stambaugh's "The Lower Rio Grande Valley" in *Texas Monthly* for June, 1929, is a discussion of the economic development of the lower Rio Grande region.

A seven-page abstract of a thesis submitted by Dr. Russell Howard Anderson in partial fulfillment of the requirements for the degree of doctor of philosophy in history in the graduate school of the University of Illinois, 1929, has been issued by the University under the title *Agriculture in Illinois during the Civil War Period, 1850-1870*.

"Land Utilization in a Typical Hill-and-Plains Area in the Corn Belt: Ashland, Missouri," by Sam T. Bratton and Leslie Fahrner, is included in the *Bulletin of the Geographical Society of Philadelphia* for October, 1929.

The *Nebraska Farmer* for March 22, 1930, is the annual pioneer number and contains a number of popular historical articles of interest to students of agricultural history.

"Early Freight and Stage Lines in Dakota" by Harold E. Briggs and Merrill G. Burlingame's "The Buffalo in Trade and Commerce" in the *North Dakota Historical Quarterly* for July, 1929, are valuable contributions to the early history of the Dakota-Montana region.

The section on factors that have determined the farming areas in *Types of Farming in South Dakota*, by R. H. Rogers and F. F. Elliott, and issued as South Dakota State College of Agriculture Bulletin 238, is pertinent to agricultural history.

Financing the Western Cattleman, by Charles I. Bray, issued by the Colorado Experiment Station, Fort Collins, December, 1928, as Bulletin 338 contains about thirty pages devoted to the history of the cattle industry in Colorado. The remainder of the study also has much on factors important in the industry's historical development.

The *Utah Farmer* for February 25, 1930, is a special fiftieth anniversary number and contains historical articles relating to the periodical and the region it serves.

H. C. Henriksen's "Citrus Culture in Porto Rico," issued by the Porto Rico Agricultural Experiment Station in February, 1930, as *Porto Rico Bulletin* 33 has a section devoted to the history and growth of citrus industry in Porto Rico.

A. R. M. Lower's article, "The Assault on the Laurentian Barrier" in the *Canadian Historical Review* for December, 1929, is a valuable study of the relation of geographical conditions to the spread of population in Canada.

The records of land grants in Upper Canada during 1787-1791 have been published in the *Seventeenth Report* of the Department of Public Records and Archives of Ontario. They are edited by Alexander Fraser and pertain to the settlement of Ontario and also the rewarding of land claimed by the Loyalists.

E. A. Cruikshank's "An Experiment in Colonization in Upper Canada" in the *Ontario Historical Society Papers and Records* for 1929 (v. 25, p. 32-77) is a well-documented study of the attempt made by the governor and executive council of the province of Upper Canada to promote rapid settlement by granting whole townships to associations of individuals on conditions that they bring settlers.

E. Nordenskiöld's "L'Apiculture Indienne," in *Journal de la Société de Americanistes de Paris* for 1929 (v. 21, no. 1, p. 169-182) is a collection of references to bee-culture in pre-Columbian America and published observations of the author upon apiculture among contemporary South American Indians. A map indicates the distribution of the custom.

In "Wilder Mais in Mexiko" in *Zeitschrift für Ethnologie* for 1929 (v. 59, no. 3-6, p. 252-254) Zelia Nuttall calls attention to the statement in Chevalier Boturini's *Idea de Una Nueva Historia General de la America Septentrional* that he had found wild maize growing in forests of the *tierra caliente* of Mexico. She urges the reliability of Boturini's report.

Lesley Byrd Simpson's "The Encomienda in New Spain; Forced Native Labor in the Spanish Colonies, 1492-1550" has been issued as volume 19 of the University of California Publications in History. It describes in detail the system of forced native labor and includes footnotes, bibliography, and appendices.

M. G. (Monk) Lewis's *Journal of a West India Proprietor, 1815-1817* (London, Routledge, 1929), edited by Mona Wilson, provides an illuminating account of slavery in the British West Indies.

F. Lange's "Landwirtschaft in Paraguay" appears in *Der Tropenpflanzer* for August, 1929.

Herbert Dent's "The Bronze Wool-weights of England" in *Apollo* for July, 1929, is of interest to those familiar with the wool trade during the late Tudor and early Stuart periods.

In an article entitled "Notes on the Early History of the Veterinary Surgeon in England" in the *Proceedings* of the Royal Society of Medicine for March, 1929, Fred Bullock traces the subject from the tenth century when the laws of Wales indicate a knowledge of horse diseases by providing for payments to men who gave remedies to animals to the establishment of the Royal College of Veterinary Surgeons in the 19th century.

"Travel and Topography in Eighteenth-Century England; A Bibliography of Sources for Economic History," by G. E. Fussell and Constance Goodman, originally in the *Transactions of the Bibliographical Society* for June, 1929, has been issued as a separate. A valuable editorial introduction is followed by a list of 177 items.

G. E. Fussell's study of "Eighteenth Century Agricultural Dictionaries" appears in the *Bulletin of the Institute of Historical Research* for February, 1930.

C. E. Russell's "Population and Wheat Production in the 18th Century" in the *History Teachers' Miscellany* for May, June, July, and August, 1929, is for the most part a study of two methods useful in estimating wheat production in the absence of statistics. These methods are: first, multiplying the population by the per capita consumption making the necessary allowances for seed and the balance between imports and exports; second, multiplying the area under crop by the yield per acre. The methods are applied to 18th century England.

"Rothamsted—the Oldest Agricultural Experiment Station in the World" is the title of an article by Irving Nelson in the *Illinois Agriculturist* for February, 1930.

